

# The Great Refractor

*It's seen plenty.*

**O**N A commanding hillock less than a mile northwest of Harvard Square sits the Harvard College Observatory and the Great Refractor, shown here. Installed in 1847, the 15-inch refractor was for 20 years the largest telescope in the United States and the equal of the finest in the world.

It was not, however, a “first.” Yale set up a fixed telescope, a five-inch refractor, in a church steeple in 1828. (If your telescope lets you see heavenly bodies directly through lenses, it is a refractor; if you see them indirectly, as images bounced off a concave mirror, you have a reflecting telescope. Harvard has a 61-

inch reflector in Harvard, Massachusetts.) The first sighting through the Great Refractor was of the moon on the afternoon of June 24, 1847, made by William Bond, “astronomical observer to the University.” He and his son George, who would succeed him as director, discovered the eighth satellite of Saturn in 1848 and Saturn’s inner ring in 1850. That year J. A. Whipple, using this instrument, made the first daguerreotype of a star, Vega. For the next three decades astronomers gazed at stars, planets, comets, and nebulae. Thereafter, the telescope was used mostly for measuring the intensity of light. The Great Refrac-

tor retired from active duty 50 years ago.

Merz and Mahler of Munich made its 15-inch-diameter lens, a twin of one at the Pulkovo Observatory in Russia. Harvard’s instrument is today “the only one of these great Munich refractors still in situ and essentially in original condition,” says Owen Gingerich, research professor of astronomy and of the history of science. Its wooden tube, veneered with mahogany, is about 20 feet long and tapers from 16 inches at the upper end to 12 inches at the eyepiece. An observing chair on spidery legs rolls around the telescope on circular tracks and may be raised or lowered. The telescope is firmly ground-

ed: a granite pier rises 43 feet to the observing floor from a 22-foot-diameter base sunk 26 feet below ground. The pier is topped by an 11-foot-high, 11-ton granite block that carries the telescope, which is enclosed by a rotating, 14-ton, 30-foot wide dome of wood, sheathed in copper.

The telescope used to take an occasional turn on those delightful Observatory Nights when the public is welcomed in, but such use now appears to management to pose formidable safety obstacles for visitors moving about in semidarkness. “Some people are ever so keen to look through it,” says Gingerich. “It’s such a grand instrument that it is hard for them to understand that they actually get a much better view with the recently refurbished nine-inch refractor built by Alvan Clark in 1912, which is regularly used for public viewing.”

